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THE GEOLOGICAL SOCIETY OF LONDON.

The History of the Geological Society of London. By H. B. Woodward. Pp. xx+336; illustrated. (London: The Geological Society, 1907.) Price 7*s.* 6*d.* (to Fellows, 6*s.*).

THE history of the Geological Society of London is rich in interest and instruction, as the society is unique in the extent of its influence on the science it was founded to promote. Geology had no chance of a satisfactory beginning, because of its immediate discovery of evidence inconsistent with the Mosaic account of Creation and the universality of Noah's deluge. Thus geology was driven at once into cosmogony, and started where it should have ended, and its immediate encroachment on the domain of dogma involved religious controversies that were not only tiresome, but demoralising. Classical and mediæval literature both contain some true descriptions of geological phenomena, but such observations were too occasional to influence the general trend of thought. The men who wrote the first general geological treatises, from Burnet's "Sacred Theory of the Earth" to Townsend, were essentially theologians, who failed owing to their application of spiritual laws to the natural world. The pioneers of geology were not free to choose their own ground and work on it at leisure; it was their misfortune rather than their fault that their views were often the illogical offspring of observations distorted by a cosmogonic squint. "A well-educated geognost" (a term then used as synonymous with geologist), according to Bakewell in 1813, "has lost the use of his own eyes."

This method did not suit the British mind, which, in the domain of natural science, preferred facts that could be verified by observation to the uncertain products of speculation. Mephistopheles, in Goethe's *Faust,* speaking as the evil genius of Continental science, sneers at the British respect for first-hand facts:—

> "Are Britons here? They travel far to trace
> Renowned battlefields and waterfalls."

The founders of British geology believed, above all things, in such field work, and most of them were interested in economic geology and were quite indifferent to cosmogony. Their studies were devoted to the distribution of soils, as by Lister in 1684, and the agricultural surveys begun by the Board of Agriculture in 1794; or to mining geology, such as the papers of Strachey of 1719 and 1725; while William Smith, engineer and surveyor, deplored "that the theory of geology was in possession of one class of men, the practice in another." Applied geology was, however, then of no general interest, and the science was judged by its contributions to cosmogony. It was prejudiced, according to Lyell, by "the imputation of being a dangerous, or at best but a visionary pursuit"; and it was the mission of the Geological Society to reform the methods of geological work so as to remove any justification for this reputation. Its founders were full of contempt for the vain wranglings between Neptunists and Plutonists, between naturalists and theologians, and it was their ambition to direct geological inquiry into useful channels and secure a foundation of positive knowledge, on which at some future date a geological system could be firmly based. This policy was proclaimed in 1811, when the society adopted as its motto a passage from Bacon, which recommended toil instead of talk. Its loyalty to this principle was remarked by Fitton in 1817, who, in an account of the society's transactions in the *Edinburgh Review,* said that they were limited to the record of "strict experiment or observation, at the expense of all hypothesis, or even of moderate theoretical speculation." According to Lyell, in 1832, the ideal of the founders was "to multiply and record observations, and patiently await the result at some future period . . .; and it was their favourite maxim that the time was not yet come for a general system of geology, but that all must be content for many years to be exclusively engaged in furnishing materials for future generalisations"; and he claimed for the society the credit of brilliant success as the reward of its consistency to that principle.

The Geological Society had two English predecessors, the Askesian Society and the British Mineralogical Society, founded respectively in 1796 and 1799, and amalgamated in 1806. The Geological Society dates from November 13, 1807, when a party of eleven men dining at the Freemasons' Tavern, according to one version (the diary of Wm. Allen), "instituted a Geological Society"; but according to another (a letter by Sir H. Davy) they established "a little talking Geological Dining Club." This misunderstanding led to conflict between those who held that the society should be a mere social dining club and should not encroach on the domain of the Royal Society by publication of important scientific work, and those who intended that the society should raise the status and advance the knowledge of geology by a strenuous, progressive policy. Scientific London had to face this problem, Is it better for each science to have its own society, or for all of them to unite into one great institution? Some of the leaders of the Royal Society thought that the inevitable competition and overlap between independent societies would be injurious; they proposed that the Geological Society should become a branch of the Royal Society, which was to have the right to publish in the Philosophical Transactions any papers it cared to select from those read before the Geological Society. The geologists, however, considered that scientific progress could best be secured by independent societies working in friendly alliance. Their rejection of the federal policy was probably the wisest course, but it cost them the fellowship of Sir Joseph Banks and Sir Humphry Davy, who resigned as a protest against the alleged trespass on the sphere of the Royal Society.

The dinner, though part of the original plan, appears to have been always of secondary importance, and was soon abandoned to an independent geological dining club. The early meetings, how-

ever, consisted of dinner at 5 p.m., the reading of papers from seven to nine, after which often followed an informal assembly, wherein, soothed by smoke and stimulated by wine, discussion was prolonged until after midnight.

The Geological Society quickly justified its independence by raising the standard of scientific publication. It issued its Transactions on a scale of magnificence which the society makes no attempt to maintain. They were one of the finest scientific serials of their day, and the style in which the Government now issues the memoirs of our national Geological Survey is beggarly in comparison. The extravagance in illustration was possible owing to the lavish generosity of the members. Many of them were wealthy men, and they freely spent their money in promoting the objects of the society. Thus Warburton advanced 1000*l.* towards the preparation of Greenough's "Geological Map of England," and some of the members contributed an equal sum towards its publication. Most of the founders and early leaders of the society were men of distinction and influence; they were peers, members of Parliament, city merchants, and men of that professional class of which London is preeminently the home. According to Leonard Horner, the council of the society elected in 1816 "was a Council fit to govern the world."

The young society was at first exclusive, and did not represent the whole of British geology. It elected forty-two honorary members, but the list did not include William Smith. This strange omission is not clearly explained by the author, who hints that it may have been due to social prejudice. Possibly it was partly due to the fact that William Smith, in spite of the immense theoretical value of his work, was essentially an economic geologist, and he, like the two other prominent workers at applied geology, Farey and Bakewell, did not join the society. They may have regarded it as too academic, and the society may have regarded them as too commercial. On the other hand, Robert Jameson kept aloof because the society despised his high soaring flights. He was elected an honorary member in December, 1807, but that was before the publication of his "Elements of Geognosy," of which the preface is dated "The College, Edinburgh, January, 1808"; if this work, a statement of Wernerian geology, had been published a few months before, it should have cost him his honorary membership. His election did not apparently affect him, for he promptly founded the Wernerian Natural History Society at Edinburgh in 1808, perhaps in order to combat the grovelling geologists of London, and he does not appear ever to have joined the London society or taken any part in its proceedings. Was it ignorance or irony that led to the selection of the society as trustee of the Jameson fund, established to commemorate its greatest British protagonist?

The early exclusiveness of the society was due to its enthusiasm as well as to its defined policy. The election of new members had to be unanimous; absence from meetings was to be punished by fines; and no one could attend more than twice as a visitor. Although the society was also a dining club, its first ordinances were animated by the severe zeal of a star-chamber. The members were delightfully confident of their mission; according to the first constitution "all questions on which difference of opinion may arise shall be determined by ballot at the next ordinary meeting," and according to the author (p. 23) this rule appears to have been intended for the summary settlement of geological problems, and not of the society's business. But the society was too successful for such regulations, which were burst by the rapid growth in its roll of membership and the immense influence of its scientific achievements.

All this early history of the society and a summary of its work is now accessible in Mr. H. B. Woodward's monograph, which has been prepared for the centenary meeting to be held on September 26 to 28. The council is to be congratulated on having entrusted the work to an author who has an unrivalled knowledge of the literature of British stratigraphical geology, and is possessor of a rich store of traditional personal information. Mr. H. B. Woodward has been aided by many helpers. Amongst others, Sir Archibald Geikie and Prof. Bonney have read the proofs, Mr. Monckton has contributed an account of the medals, Mr. Herries has edited the reprint of the charter, and Prof. Garwood has arranged the excellent series of photographs. The author has compressed into 336 pages of fairly open print a condensed account of the work of the society, a guide to the available materials as to its history, summaries of the lives of the founders and chief early members, and instructive reprints or summaries of important discussions, one of which shows the reception accorded to Buckland's announcement of the former glaciation of the British Isles. Numerous appendices give lists of early fellows, of the presidents and the subjects of their annual addresses, of the council, the officers and officials, the awards of medals and funds, and reprint of the charter. The information is condensed, but apart from the appendices it is never dull; it is enlivened by racy stories and witty epigrams; the materials have been wisely selected, and presented with Mr. Woodward's usual literary skill.

The author's personality comes out in selection rather than in comment. He is perhaps too discreet, for he hints at explanations where a definite statement of his opinion would have been valuable. The course of the society has not always run smooth, and it is interesting to find that some of the modern criticisms are similar to those made at intervals through its life. A society with a strong policy and a definite ideal cannot expect unanimous approval, and its traditions have always been radical. It secured on incorporation an unusually liberal charter, and it has repeatedly been the pioneer in important reforms. Amongst other innovations was the admission of women to the meetings in 1860, an experiment abandoned, however, in 1863.

Mr. H. B. Woodward's history is worthy of its subject. He naturally devotes most attention to British stratigraphy, but one chapter might perhaps have been devoted to the society's contributions to

foreign geology, so many of which are of first-class importance.

The author is gently sarcastic regarding the nomenclature of some modern palæontology published by the society. The artificial Linnean system was adequate for the biology of the eighteenth century, which was innocent of such principles as "heterogenetic homogeneity." The plastic terminology that is in process of development in correspondence with the variability of life has lost in simplicity, while it has gained in truth. Scientific names, like other words, must be allowed to change in meaning, even though the change may puzzle geologists as much as a lawyer is puzzled to define such common terms as mine or mineral. The author notes with apparent regret that a fossil should be called a "koninckophyllid cyathophyllum"; but the Geological Society would be untrue to its inspiring traditions if it closed its journal to those whose living faith in evolution is much more than a mere verbal creed, and must be expected to influence all their practice. J. W. G.

ANCIENT BABYLONIAN LETTERS.

Late Babylonian Letters. By R. Campbell Thompson. Pp. xxxvi+226. (London: Luzac and Co., 1906.) Price 15*s.* net.

OF all the ancient written matter that has been discovered by modern archæological research and deciphered by the professors of languages long dead, perhaps the documents most interesting to the general reader are those which reveal to us the daily life of the people who wrote them thousands of years ago. These "human documents" are always interesting reading. Royal instructions, reports of generals or of astrologers, ministers or caravan-leaders, diplomatic correspondence, and last, but not least, the ordinary letters from one man to another, whether anent business or pleasure, have been during the last half-century recovered from the past, and are now supplementing in a most remarkable way the formal annals of the historians. From Egypt we have the famous "Tell el-Amarna Letters" of 1400 B.C., the correspondence of the time of the priest-kings (1000 B.C.) published by Spiegelberg, and the interesting series of Greek letters recovered from the sands of Oxyrrhynchus by Drs. Grenfell and Hunt, not to speak of the Coptic epistles of the monks of Deir el-Bahari in the seventh century A.D., translated by Crum and by Hall. From far Turkestan we have the wooden tablets inscribed in Kharoshthi characters, discovered by Dr. M. A. Stein, which tell us of the daily life of the Indian kingdom of Khotan in the flourishing days of Buddhism; and now Mr. R. C. Thompson (late of the British Museum), of the University of Chicago, has published an edition of a series of late Babylonian letters, being "transliterations and translations of a series of letters written in Babylonian cuneiform, chiefly during the reigns of Nabonidus, Cyrus, Cambyses, and Darius," *i.e.* from about 550 to 480 B.C. These letters are preserved in the British Museum, and the original cuneiform texts have been published by the Trustees.

The book is published by Messrs. Luzac and Co. in their admirably got-up "Semitic Text and Translation Series." Print, paper, and binding are good and appropriate. As a frontispiece Mr. Thompson gives an adaptation (with English text instead of Babylonian) of a remarkable Babylonian map of the world, which we recommend to the attention of Mr. Beazley for comparison with other ancient maps. We do not believe, by the way, that this map, with its restricted knowledge, really represents the world as known to the Babylonians of the sixth century B.C. It is obviously a copy of a far more ancient map, dating from the days when the Babylonian knew of but little beyond the limits of his own fens, which he conceived as an island surrounded by the waters of the Persian Gulf.

The perusal of these letters will be useful to the modern historian who is not content merely to recapitulate the annals of his ancient *confrères,* but wishes to give a picture of the civilisation of an ancient people. With the exception of an occasional royal epistle, such as the very interesting one of Ashurbanipal (No. 1, a century older than the rest) ordering the collection of tablets for the royal library at Nineveh, now in its entirety preserved on the shelves of the British Museum, these letters were written by the ordinary Babylonian "man in the street," the ordinary middle-class inhabitant of Babylon, and his wife. For the ladies of Babylon were as busy with the stilus as those of London are with the pen, and many of Mr. Thompson's collection were written by women. They relate to the usual round of life of a civilised people as led in an Oriental country. The letters of the modern inhabitants of Cairo, Baghdad, Lahore or Delhi must be very like them. Perhaps at Benares, rather, we might get their very counterparts. For in Babylonia, as in modern India, the temples of the gods and the business of the priests were a great factor in the city life, and a large proportion of these letters "is connected with the business of the great temple of the Sun-god at Sippar," with the landed property belonging to the temple, from which the priests drew their revenues, and with the arrangements for the temple-dues, which were often paid in kind. This is an ancient touch, which we should only find paralleled now in India and the Far East. An Oriental trait is the correspondence with regard to the transport of food, goods, materials for building, &c., by beasts. The back of a beast of burden was then, as now in the same country, the only means of transport. Babylonia has not progressed a step in the direction of the improvement of transport since the days when these letters were written; and the completion of the Baghdad Railway seems still far off!

Of the ordinary letters between man and man on matters of interest only to themselves Mr. Thompson gives many specimens. Travellers in a far country write to their friends asking for news, and upbraiding their faithless correspondents, for then, as now, "one had not time to write." Husbands indite model epistles to their wives, like one, highly commended by the editor, which reads:—

"By the grace of the gods I am well, as also is Bêl-iddin. See, I am sending a letter to Iddina-